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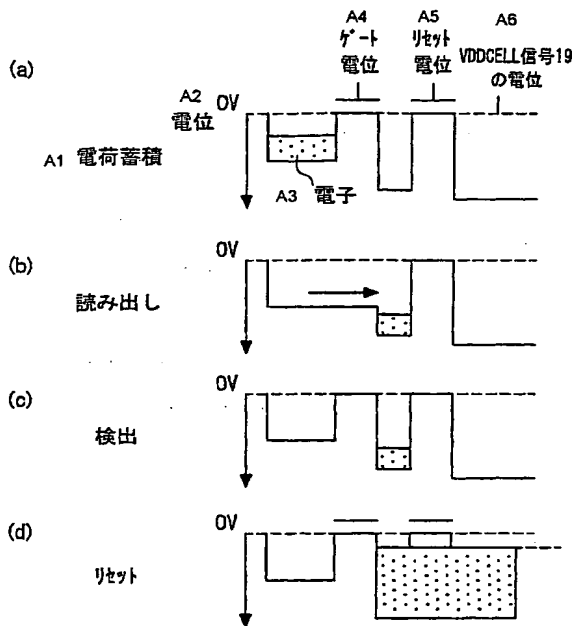
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WO 2004/049701 A1

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(21) 国際出願番号: PCT/JP2003/014560 (75) 発明者/出願人 (米国についてのみ): 米田 耕二郎 (YONEDA, Koujiro) [JP/JP]; 〒618-0071 京都府 乙訓郡 大山崎町字大山崎小字茶屋前2-22-107 Kyoto (JP). 藤井 俊哉 (FUJII, Toshiya) [JP/JP]; 〒520-0248 滋賀県 大津市 仰木の里東6丁目8-9 Shiga (JP). 岩澤 高広 (IWASAWA, Takahiro) [JP/JP]; 〒617-0826 京都府 長岡京市 開田2-8-5-603 Kyoto (JP). 山口 琢己 (YAMAGUCHI, Takumi) [JP/JP]; 〒615-0081 京都府 京都市 右京区山ノ内養老町5-1-409 Kyoto (JP).  
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[続葉有]

(54) Title: IMAGE PICKUP DEVICE

(54) 発明の名称: 撮像装置



A1...ELECTRIC CHARGE ACCUMULATION  
A2...POTENTIAL  
A3...ELECTRONS  
A4...GATE POTENTIAL  
A5...RESET POTENTIAL  
A6...POTENTIAL OF VDDCELL SIGNAL 19  
(b)...READ OUT  
(c)...DETECTION  
(d)...RESET

(57) Abstract: An image pickup device includes a photoelectric conversion element, a read-out transistor, an accumulation element, a detection transistor, and a reset transistor. The read-out transistor reads out a signal charge when the gate potential supplied to a gate terminal is changed from the first state to the second state. The detection transistor detects a voltage signal after the gate potential supplied to the gate terminal arranged in the read-out transistor is changed from the second state to the first state. The reset potential supplied to the accumulation element by the reset transistor has an intermediate potential between the gate potential of the first state supplied to the gate terminal arranged in the read-out transistor and a predetermined VDD potential.

[続葉有]



(81) 指定国 (国内): CN, KR, US.

添付公開書類:

- 国際調査報告書
- 請求の範囲の補正の期限前の公開であり、補正書受領の際には再公開される。

2文字コード及び他の略語については、定期発行される各PCTガゼットの巻頭に掲載されている「コードと略語のガイダンスノート」を参照。

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(57) 要約:

撮像素子は、光電変換素子と読み出しトランジスタと蓄積素子と検出トランジスタとリセットトランジスタとを有しており、読み出しトランジスタは、ゲート端子に供給されるゲート電位が第1の状態から第2の状態へ変化したときに信号電荷を読み出し、検出トランジスタは、読み出しトランジスタに設けられたゲート端子に供給されるゲート電位が第2の状態から第1の状態に変化した後で電圧信号を検出し、リセットトランジスタによって蓄積素子に供給されるリセット電位は、読み出しトランジスタに設けられたゲート端子に供給された第1の状態のゲート電位と所定のVDD電位との間の中間電位を有している。

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP03/14560

## A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl<sup>7</sup> H04N5/335

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl<sup>7</sup> H04N5/30-5/335

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho	1922-1996	Toroku Jitsuyo Shinan Koho	1994-2004
Kokai Jitsuyo Shinan Koho	1971-2004	Jitsuyo Shinan Toroku Koho	1996-2004

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 2002-51263 A (Sony Corp.),	1-9
Y	15 February, 2002 (15.02.02), Full text; Figs. 1 to 4 & EP 1178674 A1 & US 2002/32545 A1	11
Y	JP 2002-526992 A (Infineon Technologies AG.), 20 August, 2002 (20.08.02), Full text; Figs. 1 to 3 & WO 00/19711 A1 & EP 1119965 A	11
Y	JP 10-224694 A (Ricoh Co., Ltd.), 21 August, 1998 (21.08.98), Full text; Figs. 1 to 10 (Family: none)	11

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier document but published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search  
30 March, 2004 (30.03.04)

Date of mailing of the international search report  
13 April, 2004 (13.04.04)

Name and mailing address of the ISA/  
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP03/14560

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2001-78098 A (Fujitsu Ltd.), 23 March, 2001 (23.03.01), Full text; Figs. 1 to 13 (Family: none)	1-9, 11
A	JP 7-288745 A (Toshiba Corp.), 31 October, 1995 (31.10.95), Full text; Figs. 1 to 7 & US 5715001 A	1-9, 11

# INTERNATIONAL SEARCH REPORT

International Application No.

PCT/JP03/14560

## Box I Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:

because they relate to subject matter not required to be searched by this Authority, namely:

2. ☒ Claims Nos.: 10

because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

The "Hi-z signal" in claim 10 is unclear and "generating a signal having the intermediate potential according to the Hi-z signal" is unclear. They are not supported by the Description or the Drawings, and International Search cannot be performed.

3. ☐ Claims Nos.:

because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest ☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.